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| 10/561,830 | 12/22/2005 | Ryotaro Hayashi | SHIGA7.040APC | 5909 |

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| 20995 | 7590 | 03/06/2008 |
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| EXAMINER | |
| THOMPSON RUMMEL, PONDER N | |

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| ART UNIT | PAPER NUMBER |
| 1795 | |

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| NOTIFICATION DATE | DELIVERY MODE |
| 03/06/2008 | ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary

Application No.

10/561,830

Applicant(s)

HAYASHI ET AL.

Examiner

Ponder N. Thompson-Rummel

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/22/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>12/22/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

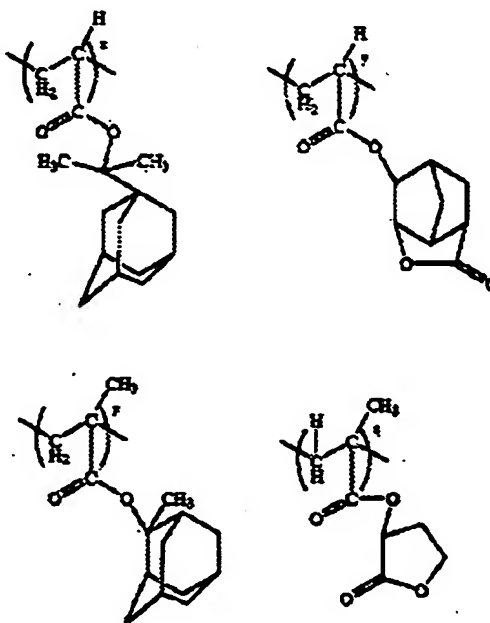
A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-16 are rejected under 35 U.S.C. 102(a) as being anticipated by Iwai et al (PCT/JP02/12524 as translated in US 2004/0110085):

With respect to claims, Iwai et al. discloses a positive type resin composition comprising:

- A mixed resin with structural units of (x), (p) and (y) and (q)



wherein R1 represents hydrogen or methyl and R2 and R3 represents a lower alkyl group (Example 1 – paragraphs [0162] – [0163]). Structural units x and p represents a structural unit consisting of an (meth)acrylate esters and structural units y and q represents a structural unit consisting of a lactone. Units x and p are in amounts of 40 mol % each and structural units (y) and (q) are in amounts of 30 and 40 mol % respectively for a total combined amount of units x and y, and p and q between 70- 80 mol% (paragraphs [0162] and [0163]);

- An acid generator such as triphenylsulfonium nonafluorobutanesulfonate (paragraphs [0133] and [0164]);
- An organic solvent such as propylene glycol monomethyl ether acetate and ethyl lactate (paragraphs [0138] - [0165]); and
- An amine such as triethanolamine (paragraph [0145]).

Iwai et al further discloses a method of forming a pattern by applying the composition to the surface of a substrate, pre-baking the substrate, exposing the composition, post exposure baking (PEB) at a temperature of 80 to 150° C, and then developing the resist by using an alkali solution (paragraph [0150]).

Claim Rejections - 35 USC § 103

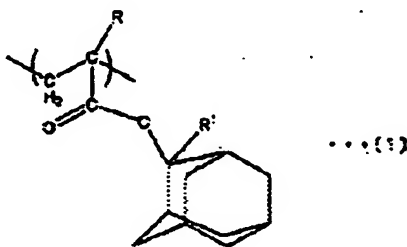
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

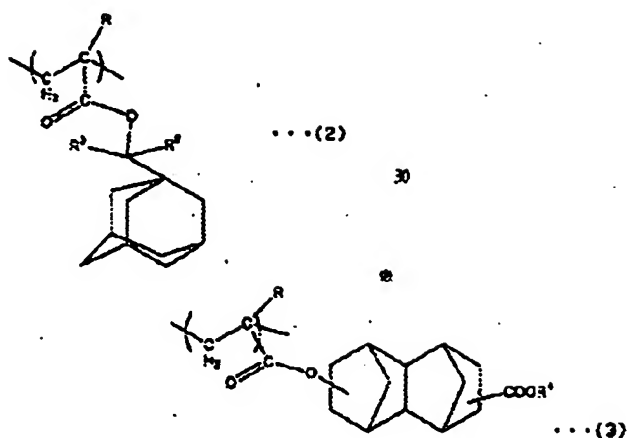
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1- 2, 5-7, 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haneda et al. (JP 2003-167347) in view of Kamabuchi et al (US 2004/0029037).

With respect to claims 1-2, 5-7, 12 and 13, Haneda et al. discloses a chemically amplified positive resist composition comprising:

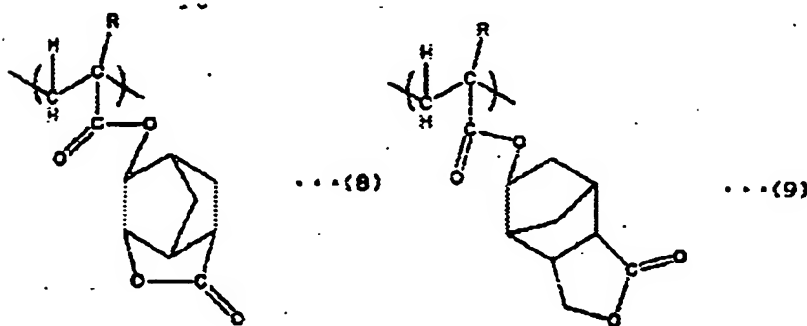
- At least one structural unit (a1), which meets the structural limitations of applicant's structural unit (a2) formula (III), derived from an acrylic ester that has a acid dissociative, dissolution controlling group wherein the structural unit is chosen from formulas 1, 2 and 3 (paragraph [0015] and Example 1- paragraph [0050] wherein Example1, R and R₁ are a methyl groups).

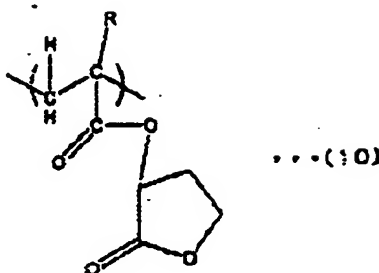




In all formulas, R is hydrogen or low alkyl group, R₁, R₂, and R₃ are independently low alkyl groups and R₄ is a tertiary alkyl group (paragraphs [0016]-[0018]);

- A structural unit (a2), which meets the structural limitations of applicant's structural unit (a3), derived from an acrylic ester that contains a lactone functional group (paragraph [0022]) wherein the structural unit is chosen from formulas 8, 9, and 10 (paragraphs [0023]-[0028]);





- An acid generator such as a fluorinated alkyl sulfonic acid like triphenylsulfonium nonafluorobutane sulfonate (paragraph [0041]) used in the amount of 0.5-30 mass% of the total resin (paragraph [0042]);
- An organic solvent such as propylene glycol monomethyl ether acetate and ethyl lactate (paragraph [0044]);
- An amine such as a trimethylamine (paragraph [0046]).

However, Haneda et al. fails to disclose the use of an additional structural as unit derived from an acrylic ester that has an acid dissociative, dissolution-controlling group.

Kamabuchi et al. disclose a positive type resist composition comprising a 2-alkyl-2-adamantyl methacrylate such as a 2-ethyl-2-adamantyl (meth)acrylate that meets the structural limitations of (a1) of applicant's formula (III) (paragraph [0133]). Further, Kamabuchi et al. disclose that two or more kind of the monomer having the group dissociated by the action of an acid may be used together (paragraph [0133]). By using 2-ethyl-2-adamantyl (meth) acrylate, the

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balance between sensitivity and heat resistance improves. Excellent resolution is also obtained by the use of the adamantyl methacrylate (paragraph [0131]).

It would have been obvious to one of ordinary skill within the art at the time of the invention to include an additional structural as unit derived from an acrylic ester that has an acid dissociative, dissolution-controlling group such as one in the composition of Kamabuchi et al. within the positive resist composition of Haneda et al. to further improve the balance between sensitivity and heat resistance and provide excellent resolution.

With respect to claims 14-16, Haneda et al. further discloses a method of forming a pattern by applying the composition to the surface of a substrate, pre-baking the substrate, exposing the composition, post exposure baking (PEB) at a temperature of 80 to 150° C, and then developing the resist by using an alkali solution (paragraph [0048]).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ponder N. Thompson-Rummel whose telephone number is 571-272-9816. The examiner can normally be reached on Monday-Friday 7:00 am - 4:30 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Alexa Neckel